1. Record Nr. UNINA9910141500403321

Autore	Lieberman Norman P
Titolo	Troubleshooting vacuum systems [[electronic resource]] : steam turbine surface condensers and refinery vacuum towers / / authored by Norman P. Lieberman
Pubbl/distr/stampa	Salem, Mass., : Scrivener Pub. Hoboken, N.J., : Wiley, c2012
ISBN	1-118-57096-0 1-299-18654-8 1-118-57120-7 1-118-57092-8
Descrizione fisica	1 online resource (282 p.)
Disciplina	621.5/50288 621.55 621.550288
Soggetti	Vacuum technology Electronic books.
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Includes index.
Nota di contenuto	Cover; Title Page; Copyright Page; Dedication; Contents; Preface; Introduction; Definition of Terms; Other Books by Author; 1 How Jets Work; 1.1 The Converging-Diverging Ejector; 1.2 Interaction of Steam Nozzle with Converging-Diverging Diffuser; 1.3 Compression Ratio; 1.4 Converging-Diverging Ejector; 1.5 Velocity Boost; 1.6 Surging; 1.7 Critical Discharge Pressure; 1.8 Observing the Conversion of Heat to Velocity; 1.9 Jet Discharge Pressure; 1.10 Reducing Primary-Jet Discharge Pressure; 1.11 Bypassing First Stage Ejectors; 2 Making Field Measurements; 2.1 Getting Started 2.2 How to Unscrew Steel Plugs2.3 Effect of Barometric Pressure on Indicated Vacuum; 2.4 Use of Piccolo; 2.5 Measuring Deep Vacuums using an Hg Manometer; 2.6 Measurement of a Deep Vacuum without Mercury; 2.7 Measuring Condensibles in Feed to First Stage Ejector; 2.8 Identifying Loss of Sonic Boost by Sound; 2.9 Identifying Air Leaks; 2.10 Air Leaks in Flanges; 2.11 Vacuum Measurement Units; 3 Tabulation of

Vacuum System Malfunctions; 3.1 Tidal Flop in Delaware; 3.2 Critical Discharge Pressure; 3.3 Fouling in Final Condenser; 3.4 Reduction in Back Pressure; 3.5 Loss of LVGO Pan Level
3.6 Variations in Cooling Water Temperature3.7 Multi-Component Malfunctions; 3.8 Partial Tabulation of Vacuum System Malfunctions; 4 Effect of Water Partial Pressure on Jet Efficiency; 4.1 Vapor Pressure of Water Limits Vacuum; 4.2 Reminder about Water Partial Pressure; 4.3 Air Leaks in Steam Turbine Surface Condensers; 4.4 Variable Cooling Water Temperature; 4.5 Loss of Sonic Boost; 4.6 Relative Jet Efficiency; 4.7 Definition of ""Vacuum Breaking""; 4.8 Critical Discharge Pressure Exceeded; 5 Air Leaks; 5.1 Upper Explosive Limits; 5.2 How to Find Air Leaks; 5.3 Diffuser Air Leaks
5.4 Air Leaks on Vacuum Towers5.5 Air Leaks in Heater Transfer Lines; 5.6 Air Leaks - Turbine Mechanical Seal; 6 Sources and Disposal of Hydrocarbon Off-Gas; 6.1 Evolution of Cracked Gas; 6.2 Sources of Cracked Gas; 6.3 Cracked Gas Evolution from Boot; 6.4 Air Equivalent; 6.5 Overloading Vacuum Jets; 6.6 Excess Cracked Gas Flow; 6.7 Field Checking Gas Flow Meter in Vacuum Service; 6.8 Surging 3rd Stage Jet Bogs Down Primary Jet; 6.9 Exchanger Leaks Overloads Jets; 6.10 Poor Vacuum Tower Feed Stripping; 6.11 Level Connection Purges and Pump Mechanical Seal Gas
6.12 Effect of Heater Outlet Temperature6.13 Extracting H2S from Vacuum Tower Off-Gas Upstream of Ejectors; 6.14 Disposal of Seal Drum Off-Gas; 6.15 Fouling of Waste Gas Burner; 7 Motive Steam Conditions; 7.1 Effect of Wet Steam; 7.2 Water in Motive Steam; 7.3 The Tale of Weak Steam; 7.4 Internal Freezing of Steam Nozzle; 7.5 High Pressure, Superheated Motive Steam; 7.6 Effect of Moisture Content of Saturated Steam on Temperature; 7.7 Steam Pressure Affects Vacuum; 7.8 Effect of Superheated Steam; 8 Mechanical Defects of Ejectors; 8.1 Steam Nozzle Testing; 8.2 Other Mechanical Defects of Jets
8.3 Fouled Steam Nozzles

Sommario/riassunto

Vacuum systems are in wide spread use in the petrochemical plants, petroleum refineries and power generation plants. The existing texts on this subject are theoretical in nature and only deal with how the equipment functions when in good mechanical conditions, from the viewpoint of the equipment vendor. In this much-anticipated volume, one of the most well-respected and prolific process engineers in the world takes on troubleshooting vacuum systems, and especially steam ejectors, an extremely complex and difficult subject that greatly effects the profitability of the majority of the world'